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United States General Accounting Office

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Briefing Report to the Chairman,  
Subcommittee on Oversight and  
Investigations, Committee on Energy and  
Commerce, House of Representatives

December 1987

# AIR POLLUTION

## EPA's Process for Planning, Budgeting, and Reviewing Research



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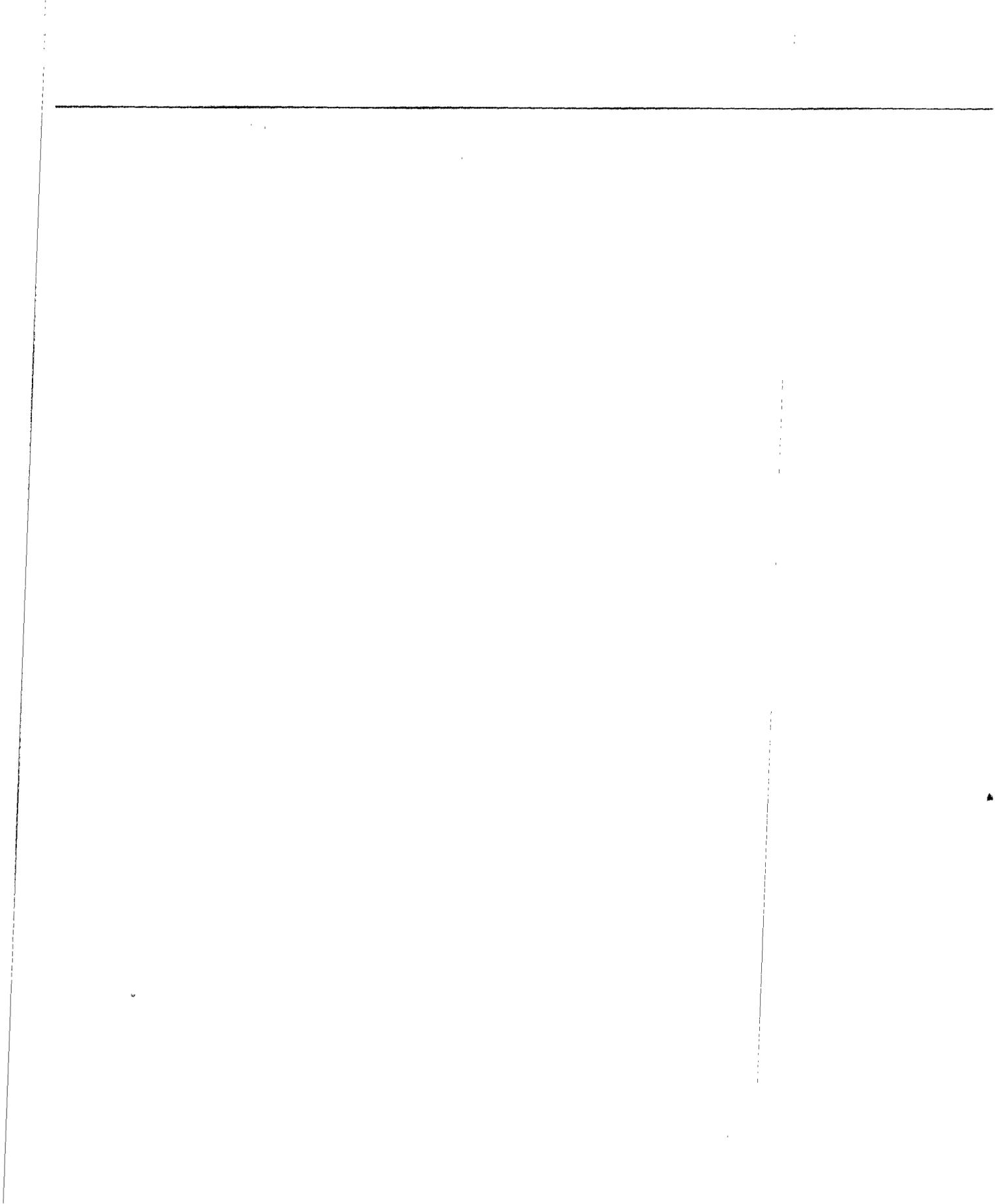
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United States  
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Washington, D.C. 20548

Resources, Community, and  
Economic Development Division

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December 15, 1987

The Honorable John D. Dingell  
Chairman, Subcommittee on Oversight and  
Investigations  
Committee on Energy and Commerce  
House of Representatives

Dear Mr. Chairman:

In several meetings with your office, you expressed concern that the Environmental Protection Agency (EPA) may not give adequate consideration to the needs of EPA regulators in planning and budgeting for research. You also expressed an interest in the extent that EPA research programs are reviewed by both EPA and outside experts. On July 30, 1987, we briefed your office on these matters. This briefing report summarizes the information discussed during that briefing.

In summary, we found that EPA is using a three-tiered, 19-step process for planning and budgeting research activities (see app. I). Tier one (strategic issue development) consists of identifying and documenting key issues that will determine EPA's research program over the next 5 years. The second tier (budget request formulation) flows directly from strategic issue development and defines the resources and outputs required for specific research issues. Operating plan formulation, the third and most detailed tier of the process, defines each program office's research needs for the upcoming year and identifies when specific products are needed.

EPA's three-tiered planning and budgeting process is designed to provide ample opportunity for the needs of EPA regulators to be incorporated into the research planning and budgeting process. The process includes extensive involvement by managers from EPA research offices and laboratories and from various program offices which are the ultimate users of the research. At several key points in

the planning and budgeting process, researchers and research users work together on committees to reach consensus on major issues, products needed, and the relative priorities assigned to each.

Planned, ongoing, and completed EPA research is subjected to both internal and external reviews. Internal reviews are conducted by EPA research committees which conduct a series of multi-disciplinary program reviews each year. The reviews determine whether research responds to the strategic issues and needs identified by the program offices and whether the delivered products will be timely and what was expected. External reviews and evaluations of EPA research are conducted periodically by the Science Advisory Board and other scientists independent of EPA. For example, the Board conducts a series of reviews of ongoing research programs each year to determine whether they are pertinent to the development of environmental regulation and policy.

According to the Assistant Administrator for EPA's Office of Research and Development, while EPA's three-tiered planning and budgeting process and its multiple review process are currently being used, they have not officially been adopted as EPA policy. Although EPA plans to incorporate the processes in its interim guidance for preparing the 1990 budget, there are no plans for documenting the processes in an EPA policy statement. We endorse EPA efforts to include its research planning, budgeting, and reviewing processes in its 1990 budget guidance. In addition, we recommend that EPA incorporate the processes into an EPA policy statement to provide guidance and continuity for current and future EPA managers. (See section 6.)

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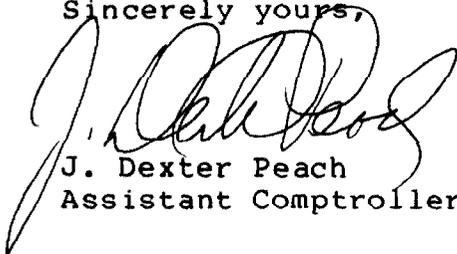
Information presented in this report was obtained from interviews with EPA officials representing the Office of Research and Development, the Office of Air and Radiation, and with the Co-chairpersons of the Air and Radiation Research Committee. We also reviewed key EPA documents, including policy statements; briefing documents; annual reports and budget justifications; Science Advisory Board reviews of EPA research programs; and EPA's 5-year research agenda. (Section 1 discusses our scope and methodology in more detail.)

Sections 2 through 4 of the report provide a detailed discussion of the major steps within EPA's three-tiered, 19-step planning and budgeting process. Section 5 discusses provisions for reviewing EPA research by both EPA reviewers and by outside experts. Appendix I shows the planning, budgeting, and reviewing process. EPA's research committees and cognizant program offices are listed in appendix II.

We discussed EPA's process for planning, budgeting, and reviewing research with EPA officials and have included their comments where appropriate. However, at your request, we did not obtain official agency comments on a draft of the report.

As arranged with your office, unless you publicly release its contents earlier, we plan no further distribution until 30 days from the date of this letter. At that time, copies of the report will be sent to appropriate congressional committees; the Administrator, Environmental Protection Agency; and the Director, Office of Management and Budget. This work was done under the direction of Hugh J. Wessinger, Senior Associate Director. Major contributors are listed in appendix III.

Sincerely yours,



J. Dexter Peach  
Assistant Comptroller General



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### ABBREVIATIONS

EPA	Environmental Protection Agency
GAO	General Accounting Office
OAQPS	Office of Air Quality Planning and Standards
OAR	Office of Air and Radiation
OMB	Office of Management and Budget
ORD	Office of Research and Development
SAB	Science Advisory Board

OBJECTIVES, SCOPE, AND METHODOLOGY

- The Chairman asked us to provide information on how the Environmental Protection Agency (EPA) establishes research priorities and the extent that research programs are peer reviewed.
- Between April and September 1987, we conducted interviews with and collected documents from officials at EPA headquarters and the Office of Air Quality Planning and Standards (OAQPS).
- While EPA's process for planning, budgeting, and reviewing research was discussed with EPA officials, at the Chairman's request, official agency comments on a draft of the report were not obtained.

## SECTION 1

### OBJECTIVES, SCOPE, AND METHODOLOGY

Because of interest expressed by the Chairman, Subcommittee on Oversight and Investigations, House Committee on Energy and Commerce, we obtained information on how the Environmental Protection Agency establishes priorities for research supporting its regulatory programs and the extent to which EPA research programs are reviewed by EPA and outside experts. Specifically, we obtained information on each of the 19 steps in EPA's three-tiered process for planning and budgeting research. We also obtained information on EPA's multiple review processes for planned, ongoing, and completed research.

Our review was conducted between April and September 1987 at EPA headquarters and at the Office of Air Quality Planning and Standards, Durham, North Carolina. We obtained information for the review through interviews with EPA officials from the Office of Research and Development (ORD), the Office of Air and Radiation (OAR), and the Air and Radiation Research Committee. We also reviewed key EPA documents, including: ORD policy statements; ORD and OAR briefing documents; ORD annual reports and budget justifications; Science Advisory Board (SAB) reviews of EPA research programs; and EPA's 5-year research agenda. Because EPA's system for planning, budgeting, and reviewing research is the same for all program offices, we selected only one (OAR) for our site work.

We discussed EPA's process for planning, budgeting, and reviewing research with EPA officials and have included their comments where appropriate. However, in accordance with your request, we did not obtain official agency comments on a draft of this report. Our review was performed in accordance with generally accepted government auditing standards.

### STRATEGIC ISSUE DEVELOPMENT

- The ORD Assistant Administrator proposes strategic issues and develops long-term research goals.
- The Assistant Administrators for program offices provide input on priorities for proposed strategic issues.
- The ORD Assistant Administrator reaches consensus with program Assistant Administrators on strategic issue priorities.
- The EPA Administrator meets with all Assistant Administrators to discuss and evaluate strategic issue priorities.
- The approved strategic issues are circulated to research committees, ORD Directors, and Regional Administrators.

## SECTION 2

### STRATEGIC ISSUE DEVELOPMENT

Strategic issue development, the initial tier in EPA's three-tiered, 19-step planning and budgeting process, involves identifying key issues that will determine the future direction of EPA's research program for the next 5 years. The process, which is performed annually, begins with the ORD Assistant Administrator sending out proposed strategic research issues to each EPA Assistant Administrator with program responsibility (see app. II) and developing his own long-term goals for the EPA research program. Examples of strategic issues proposed for fiscal year 1989 include:

- What scientific support is needed to develop and review primary and secondary National Ambient Air Quality Standards?
- What scientific data are needed to support the mobile source regulatory program?
- What scientific data are needed to support EPA's indoor air program?

After reviewing the proposed strategic issues, the Assistant Administrators for the EPA program offices comment on the issues and provide their judgment on the relative priorities to be assigned to each issue. Each Assistant Administrator then meets individually with the ORD Assistant Administrator to reach a consensus on the issues and priorities within his or her program.

Finally, all Assistant Administrators attend a planning meeting chaired by the EPA Administrator. At this meeting, priorities and issues across program offices are discussed and evaluated. Approved issues are then distributed to members of the research committees, ORD Directors, Regional Administrators, and Deputy Regional Administrators.

### BUDGET REQUEST FORMULATION

- The research committees refine strategic issues and present priorities to the Assistant Administrator, ORD, for budgeting purposes.
- The ORD Assistant Administrator issues resource planning targets and indicates funding levels for research initiatives.
- ORD develops proposed research programs, including major products, delivery dates, and resource requirements.
- The research committees reach consensus on key products to be provided.
- ORD resource distribution is reviewed by research committees for consistency with agreements on products.
- The ORD Assistant Administrator reaches mutual understanding with program Assistant Administrators before presenting research budget to the EPA Administrator.
- The ORD Assistant Administrator presents research budget to the EPA Administrator, with program Assistant Administrators present.
- The proposed research budget is presented to the Office of Management and Budget (OMB).
- The President's budget is forwarded to the Congress.

### SECTION 3

#### BUDGET REQUEST FORMULATION

The budget request formulation process flows directly from the strategic issue development process. The process begins approximately 18 to 20 months before the beginning of the fiscal year and defines proposed resources and outputs associated with specific research issues identified during the initial tier of the planning and budgeting process.

EPA research committees, comprised of managers from various research offices and laboratories, regulatory and enforcement program offices, and regional offices, initiate the budget request process by further refining and interpreting specifics of the approved strategic issues. Proposed research priorities, new research initiatives, and major redirections in existing research are presented to the ORD Assistant Administrator.

After receiving input from the research committees, the ORD Assistant Administrator issues resource planning targets for both in-house and extramural (externally performed) research. The Assistant Administrator states research priorities and indicates which research initiatives he or she wants funded at different budget request levels. The Office of Research and Development then proposes research programs that identify major products, scheduled delivery dates, and resource availability. Subsequently, the responsible research committees reach a consensus on key research products or research areas that will be proposed for funding. The committees also review the proposed funding levels to assure that they make sense in view of the agreements reached on research products and services.

The ORD Assistant Administrator briefs each program Assistant Administrator on the results of the research committees' reviews and obtains mutual agreement with all Assistant Administrators before presenting the research budget to the EPA Administrator. Further, representatives of the program offices, Assistant Administrators, and the EPA regional offices are present when ORD presents its proposed research budget to the EPA Administrator. According to the ORD Assistant Administrator, the EPA Administrator often asks the program and regional officials for their input on the proposed budget.

After obtaining the Administrator's approval, the research budget is submitted to OMB for its review and then to the Congress for approval and funding.

OPERATING PLAN FORMULATION

- Program offices describe research needs, including specific products and desired delivery dates for upcoming year.
- ORD develops research proposals to match program needs and to ensure balance between short-term and long-term research.
- ORD presents draft planned program accomplishments to research committees.
- The ORD Assistant Administrator is briefed on research committee decisions and hears any appeals by program, regional, and research offices.
- The ORD Assistant Administrator makes final decisions on research and requests any needed reprogramming of funds.

## SECTION 4

### OPERATING PLAN FORMULATION

Operating plan formulation represents the most detailed level of EPA research planning. During this process, which begins approximately 6 months before the start of the fiscal year and continues throughout the year, specific research objectives and products, such as particular air models, are negotiated and agreed upon. The Assistant Administrators for each program office describe their research support needs for the upcoming year, including specific products needed and the desired delivery dates. Based on the needs of the program offices, ORD laboratory and office directors prepare research proposals and submit them to the program offices for review. In addition to research requested by the program offices, ORD's research proposals include long-term or core research that is not necessarily requested by the program offices but is considered important to the long-term scientific well being of EPA. Examples of EPA core research programs include (1) human health and ecological risk methods development and application and (2) risk-reduction research.

After review by the program offices, ORD submits its draft research proposals to the appropriate research committees for discussion and negotiation. The purpose of the committees' discussions is to reach agreement on product needs and not resource availability. The committees' first priority is to reach consensus on the proposals at the program level. If consensus cannot be reached, the responsible program and regional offices may suggest changes in requested research products. If the committees are still not in agreement, the committee Co-Chairmen and lead Deputy Regional Administrator try to reach agreement. If they cannot agree on a resolution, the committee Co-Chairman, representing ORD, raises the issue to the ORD Assistant Administrator.

After research committee decisions are relayed to the ORD Assistant Administrator, regional and program office officials and ORD office directors have an opportunity to present any appeals. Such appeals, however, are discouraged and will only be considered if a major program office or regional need is being ignored or not receiving adequate attention and the mission or capabilities of an EPA office or laboratory are adversely affected. Final proposals reflecting the decisions and approvals of the ORD Assistant Administrator are prepared and the necessary resources are requested.

REVIEW AND EVALUATION OF RESEARCH

- Research committees conduct series of reviews of ongoing and completed research programs.
- SAB conducts at least six reviews of research in progress each year.
- SAB conducts annual review of EPA's proposed research and development budget.

## SECTION 5

### REVIEWING AND EVALUATING ONGOING AND COMPLETED RESEARCH

Reviews and evaluations of ongoing and completed research by the EPA research committees and by scientists independent of EPA are important aspects of the EPA research program. Among other things, the reviews and evaluations allow program and regional offices to interact with laboratory researchers at a time when they may influence the direction of current and future research. They also enable transfer of critical research findings prior to completion of lengthy research projects.

EPA policy calls for each of the six research committees to conduct at least one series of multi-disciplinary program reviews each year. The reviews may be organized on a laboratory-by-laboratory basis or may concentrate on specific issues such as indoor air. The reviews should include both research completed during the last year as well as ongoing research. Further, the reviews are designed to focus on results rather than actions and address such questions as:

- Does the research respond to the strategic issues and needs identified by the program office?
- Will the delivered products be what was expected?
- Will the products be delivered in a timely fashion?
- Is the research heading in the right direction, and should any mid-course corrections be made?

Corrective actions required as a result of the reviews are documented by the research committees and presented to the ORD Assistant Administrator and to the EPA office and laboratory directors involved.

At the request of ORD, the Science Advisory Board, a group of scientists independent of EPA, has also agreed to conduct a series of reviews of ongoing EPA research programs each year. Teams of outside experts assess the effectiveness of EPA's research programs in terms of providing information needed to develop environmental regulations and policies. Particular emphasis is placed on the extent to which EPA research programs appear responsive to future research needs.

For example, SAB recently reviewed EPA's integrated air cancer program. EPA requested that SAB review the program, addressing eight specific questions in three broad areas: (1) strategy and approach, (2) relevance to risk assessment, and (3) determination

of health affects. After reviewing a description of the program and the results of previous reviews, a SAB subcommittee heard briefs from researchers at the Health Effects Research Laboratory in Research Triangle Park, North Carolina. Following the presentation, the subcommittee members asked questions of the researchers, prepared a draft report, and provided an oral summary of their findings to the researchers and laboratory managers. These actions were followed by a written report to the EPA Administrator.

In addition to its reviews of ongoing research programs, SAB recently completed its second annual review of the President's proposed budget for EPA research and development. The review, which was requested by ORD, addressed such major issues as trends in the research budget and continuing core research needs. In addition, SAB's annual review examined and commented on specific research projects in eight major areas. For example, specific programs reviewed within the air area included indoor air research, ambient air quality research, research on the effects of ozone on forests, and global climate and stratospheric modification research.

In addition to the reviews discussed above, individual EPA research projects and programs are continually peer reviewed by independent scientists other than those associated with SAB. According to the ORD Assistant Administrator, this represents ORD's "front line" peer reviews.

## SECTION 6

### CONCLUSIONS AND RECOMMENDATION

EPA's system for planning and budgeting research is designed to provide reasonable assurance that the information needs of EPA regulators are considered in establishing research priorities. At several key points in EPA's three-tiered, 19-step planning and budgeting process, researchers and regulators--the users of the research--are required to work together to reach consensus on priorities for major research issues and products. EPA has also established a multiple peer review process whereby planned, ongoing, and completed research is subjected to review by EPA research committees, members of SAB, and other scientists independent of EPA.

While we endorse EPA plans for incorporating its research planning, budgeting, and reviewing processes in interim guidance for the fiscal year 1990 budget cycle, we recommend that the Administrator formally document these processes in an EPA policy statement. Documenting the process in a formal policy statement would enhance EPA's internal controls by better assuring that appropriate Agency officials are aware of their respective responsibilities and it would increase the likelihood that the processes are efficiently and effectively carried out. Also, incorporating detailed steps on research planning, budgeting, and reviewing into EPA policy will provide needed continuity and guidance for current and future EPA administrators and managers.

**Figure 1: Planning, Budgeting and Reviewing EPA Research**

**Strategic Issue Development**  
(5 year research plan)

1  
AA-ORD sends proposed strategic issues to program AA's

2  
Program AA's provide input on relative priorities of strategic issue proposals

**Budget Request Formulation**  
(begins 18-20 months before FY)

10  
ORD resource distribution reviewed by research committees in light of agreements reached on research outputs.

9  
**Research committees strive to reach consensus on key products or research areas to be provided with available resources.** \*

11  
**AA-ORD briefs program AA's on committee results to ensure mutual understanding before presenting budget to EPA Administrator.** \*

12  
AA-ORD presents research budget to EPA Administrator in the presence of program and regional representatives.

**Operating Plan Formulation**  
(begins 6 months before FY and continues throughout the FY; some overlap with Budget Formulation)

19  
AA-ORD makes final decisions and approvals and any resource reprogrammings are requested

18  
Research committees brief AA-ORD on their decisions. Regional and program office managers and ORD directors may present appeals

**Review of the Research**

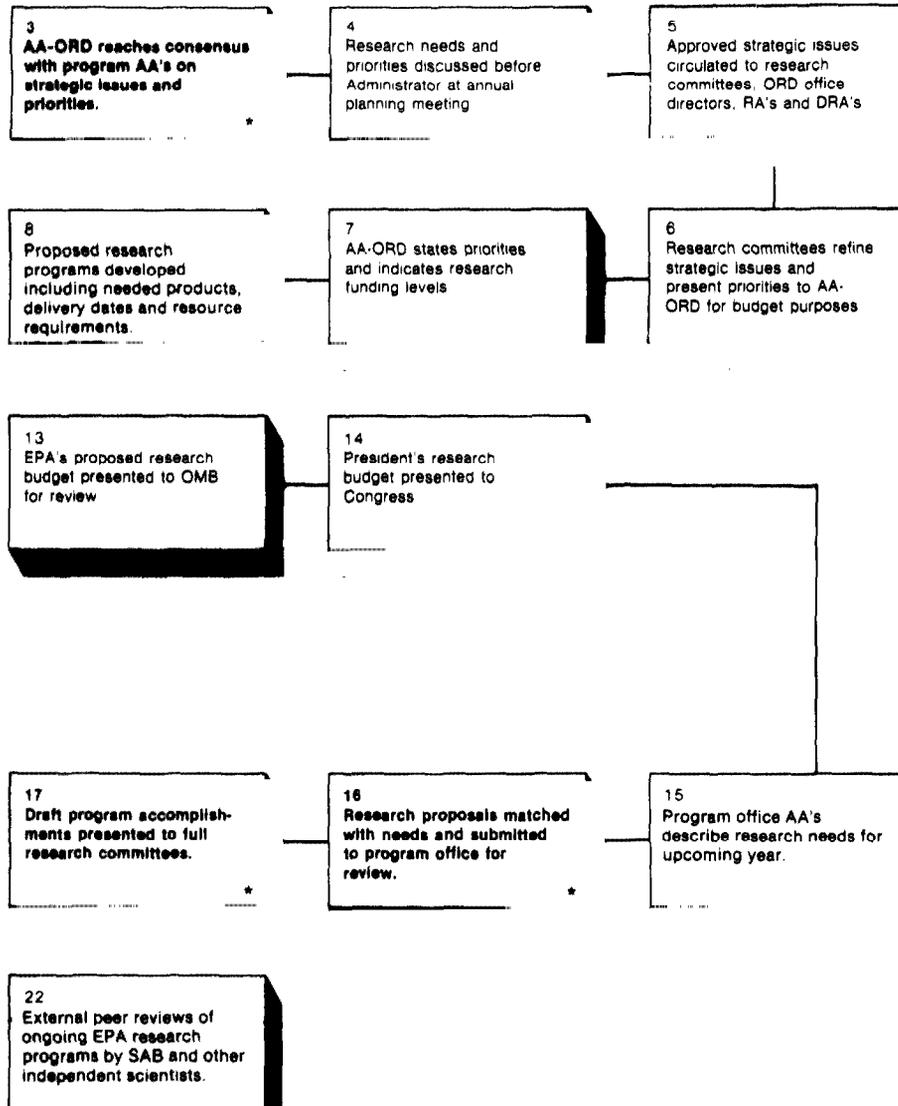
20  
SAB conducts annual review of President's proposed budget for EPA research and development

21  
Research committees review research in progress as well as research completed in last year

\*Steps where ORD and Program Offices strive to reach a consensus.

Source: Developed by GAO using EPA data.

**Figure I: Planning, Budgeting and Reviewing EPA Research (Continued)**



EPA RESEARCH COMMITTEES AND  
CORRESPONDING PROGRAM OFFICES

<u>Research Committee</u>	<u>Program Office<sup>a</sup></u>	<u>Areas of Coverage</u>
Air and Radiation Research Committee	Office of Air and Radiation	Air and radiation
Water Research Committee	Office of Water	Water quality and drinking water
Hazardous Waste/Superfund Research Committee	Office of Solid Waste and Emergency Response	Solid and hazardous waste, Superfund
Pesticides/Toxics Research Committee	Office of Pesticides and Toxic Substances	Pesticides and toxics
Multi-media Energy Research Committee	Office of Air and Radiation	Acid deposition
Interdisciplinary Research Committee	Not Applicable	Risk assessment, Quality assurance management, Exploratory research, Technical information/Technology transfer

<sup>a</sup>Each program office is headed by an Assistant Administrator.

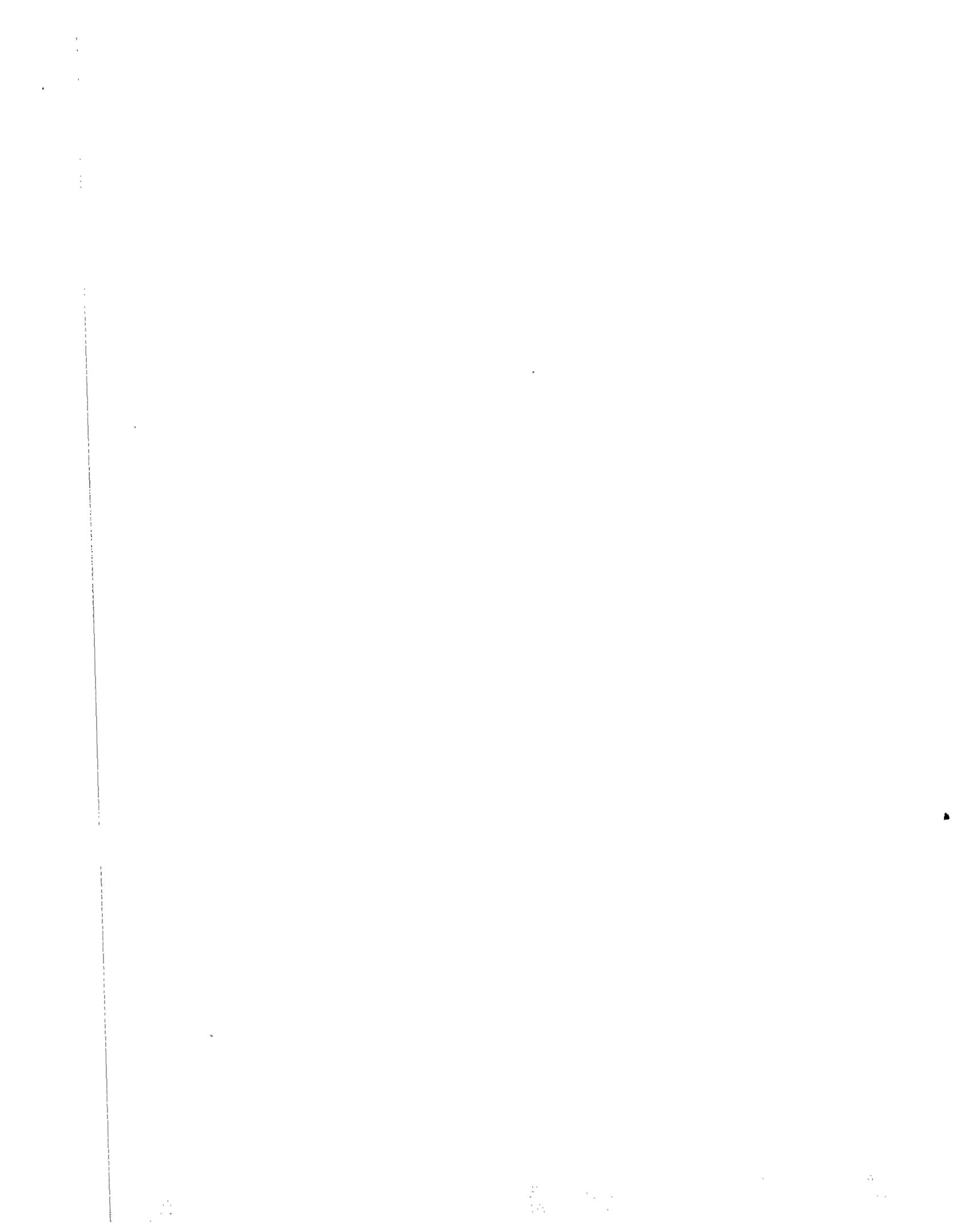
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